REMARKS/ARGUMENTS

Replacement sheets for Figures 1 through 3 are enclosed to provide the "Prior Art" label as required by the Examiner.

Applicants' below-signed agent wishes to thank the Examiner for granting a telephone interview on July 15, 2008.

During the Interview, the distinction between Applicants' claim 1 and the applied references was discussed, in particular the significance of Figure 5. It was agreed that the claim language should be clarified, without changing the scope of the claims, to substitute the expression "energy" by "power" and to clarify that the features defined in the wherein clause of Claim 1 relate to the structure associated with the primary pump source and the seed power means. The meaning of "flatten" as it relates to the gain illustrated in Figure 10 and described at paragraph 46 of the PG-Pub was discussed. The Examiner agreed that an amendment to Claims 5, 15 and 21 to clarify the originally intended meaning of "to flatten the profile of the distributed Raman gain" in accordance with the description of the original specification would be acceptable and desirable.

It was also discussed in the Interview that the references cited in the International Search Report were submitted in an IDS a few hours before the Interview. Unfortunately, these references were not available to the Examiner in the PALM system at the time of the Interview.

Regarding the 103(a) rejection of Claims 1, 11, 14 and 18, it was discussed during the Interview that Webb teaches a Raman fiber laser that is used as a local pump source for a remote optically pumped amplifier. As discussed, the term ROPA is used conventionally to refer to a remote (from the transmitter or receiver end) optically

pumped amplifier, and Applicants use the term to mean a remotely pumped optically pumped amplifier.

Applicants discovered that, by using a cascaded pumping scheme, more pump power can be delivered within a transmission span, from a transmitter or receiver end of a span, to a remote optical amplifier than could be delivered by launching the maximum tolerable power at the final ROPA pump wavelength into the pump delivery fiber, whether it be the transmission fiber or a dedicated pump delivery fiber.As discussed during the Interview, this result is unexpected and unobvious.

As described in paragraph 33 of the Applicants' PG Pub, the maximum power at the final ROPA pump wavelength that can be usefully launched into the delivery fiber is limited by the Raman gain produced in the fiber by this launched power. As the launched power approaches ~1.3 W, the gain at the peak of the Raman gain profile (which, for a ROPA pump wavelength of 1480 nm, occurs at a wavelength of ~1590 nm) becomes so high that lasing at 1590 nm begins to occur in the delivery fiber. This results in depletion of the 1480-nm power travelling in the fiber as it is converted to power at 1590-nm which is useless for pumping the ROPA. The end result is that the 1480-nm power delivered to the ROPA decreases precipitously.

With the cascaded pumping scheme, the Applicants discovered that, as shown in Figure 5, the maximum in-fiber power at 1480 nm can be kept below the level that would result in lasing at 1590 nm while at the same time resulting in a higher 1480-nm power far out in the span than would result from the direct launch of 1.3 W of 1480-nm power. Furthermore, for the case where the pump power is delivered along the transmission fiber, the incoming signals experience distributed Raman gain due to the pump power propagating in the fiber. As described, for example, at paragraph 33 of Applicants' PG-Pub, when this gain is too high (> ~28 dB), the signals suffer multi-path interference (MPI) transmission penalties due to double Rayleigh signal scattering. In fact, for the upper 10-nm portion of the C-band, the maximum 1480-nm power that can be directly

launched before gain-related problems occur is significantly less than 1.3 W. However, as shown in Figure 10, the Applicants' cascaded pumping scheme allows the Raman gain experienced by the signals across the entire C-band to be kept below the level where MPI penalties would be incurred, while the pump power delivered to the optical amplifier in the span is greater than that which would result from the direct launch of 1.3 W at 1480 nm.

In view of the foregoing, favorable reconsideration of the present application is respectfully requested.

Respectfully submitted,

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Enclosures: Replacement sheets for Figure 1 and Figures 2-3